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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,357	11/03/2003	Oh-Yong Choi	0630-1861P	1165
2292	7590	10/18/2005	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			RIELLEY, ELIZABETH A	
			ART UNIT	PAPER NUMBER
			2879	

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

EV

Office Action Summary	Application No. 10/698,357	Applicant(s) CHOI, OH-YONG	
	Examiner Elizabeth A. Rielley	Art Unit 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>11/3/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

Claims 7 and 17 are objected to because of the following informalities: the phrases “an interval between the mask frame and the shadow mask at a position corresponding to 70% of a distance from the end of the long side of the mask frame toward the center thereof” and “a position corresponding to 70% of a distance from the end of the short side of the mask frame toward the center thereof” are not clear, since a position can not correspond to a percent of a distance. Does the Applicant mean anywhere in that 70% of the distance between the end of the side toward the center or at the 7/10ths mark? Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 3 and 13 recites the limitation "a radius of curvature of the long/short side of the mask frame". There is insufficient antecedent basis for this limitation in the claim, since no curves had been mentioned.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7 and 11-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nose et al (US 6104132) in view of Tani et al (US 6268688).

In regard to claims 1 and 11, Nose et al ('132) teach a cathode ray tube comprising: a panel (1; figure 1; column 5 lines 20-29); a shadow mask (6) installed with a certain interval from an inner surface of the panel (see figure 1), having a plurality of apertures through which electron beams pass (13), and formed as a pin-cushion shape in which long and short sides of the shadow mask are inwardly concaved (see figure 2); and the mask frame (7) for fixing and supporting the shadow mask (see figure 2). Nose et al ('132) are silent regarding the limitations of a panel of which an outer surface is substantially flat and wherein long and short sides of the mask frame are slanted from ends toward centers thereof in order to maintain a predetermined interval with the long and short sides of the shadow mask. Tani et al ('688) disclose a panel for a cathode ray tube that is substantially flat (1; column 7 lines 5-22) and the long and short sides of the mask frame are slanted from ends toward centers thereof in order to maintain a predetermined interval with the long and short sides of the shadow mask (figure 4; column 4 line 60 to column 5 line 39; abstract) in order to improve the mechanical strength of the display (column 7 lines 14-19). Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the CRT of Nose et al with the panel and frame of Tani et al ('688). Motivation to combine would be to improve the mechanical strength of the display.

In regard to claims 2 and 12, Nose et al ('132) teach the long and short sides of the mask frame are curvedly formed to have predetermined curvatures from ends to centers thereof (figure 8; column 9 lines 26-35).

In regard to claims 3 and 13, Nose et al ('132) teach the following conditions are satisfied, $R1 > R3$, $R2 > R4$, in which $R1$ denotes a radius of curvature of the long side of the mask frame, $R2$ denotes a radius of curvature of the short side of the mask frame, $R3$ denotes a radius of curvature of the long side of the shadow mask, and $R4$ denotes a radius of curvature of the short side of the shadow mask (column 6 lines 52-53).

In regard to claims 4 and 14, Nose et al ('132) teach the following condition is satisfied, $R3 > R4$ (claim 20; only one of the sides needs a curvature, the other would be zero).

In regard to claims 5 and 15, Nose and Tani disclose the claimed invention except for wherein following conditions are satisfied, $0.3 \leq DLc/DLi \leq 0.5$, $0.3 \leq DSc/DSi \leq 0.5$, in which DLc denotes an interval between the center of the long side of the shadow mask and the center of the long side of the mask frame, DSc denotes an interval between the center of the short side of the shadow mask and the center of the short side of the mask frame, DLi denotes an interval between the center of the long side of the shadow mask and a center of an imaginary line connecting both ends of the long side of the mask frame, and DSi denotes an interval between the center of the short side of the shadow mask and a center of an imaginary line connecting both ends of the short side of the mask frame. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the following conditions satisfied, $0.3 \leq DLc/DLi \leq 0.5$, $0.3 \leq DSc/DSi \leq 0.5$, in which DLc denotes an interval between the center of the long side of the

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shadow mask and the center of the long side of the mask frame, DSc denotes an interval between the center of the short side of the shadow mask and the center of the short side of the mask frame, DLi denotes an interval between the center of the long side of the shadow mask and a center of an imaginary line connecting both ends of the long side of the mask frame, and DSi denotes an interval between the center of the short side of the shadow mask and a center of an imaginary line connecting both ends of the short side of the mask frame, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

In regard to claims 6 and 16, Nose teach all the limitations set forth, as described above, except width of the slanted portion of the long side slanted from the end of the long side of the mask frame toward the center thereof is equal to or larger than 70% of a width from the end of the long side of the mask frame toward the center thereof, and a width of the slanted portion of the short side slanted from the end of the short side of the mask frame toward the center thereof is equal to or larger than 70% of a width from the end of the short side of the mask frame toward the center thereof. Tani et al ('688) teach width of the slanted portion of the long side slanted from the end of the long side of the mask frame toward the center thereof is equal to or larger than 70% of a width from the end of the long side of the mask frame toward the center thereof, and a width of the slanted portion of the short side slanted from the end of the short side of the mask frame toward the center thereof is equal to or larger than 70% of a width from the end of the short side of the mask frame toward the center thereof (column 5 lines 25-39; column 7 lines 23-42) in order to reduce the difference in temperature within the CRT (column 5 lines 26-54). Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the CRT of Nose et al with the frame of Tani et al ('688). Motivation to combine would be to reduce the difference in temperature within the CRT.

In regard to claims 7 and 17, Nose and Tani disclose the claimed invention except for having the following conditions satisfied $0.3 \leq DL3/DLi \leq 0.5$, $0.3 \leq DS3/DSi \leq 0.5$, in which DL3 denotes an interval between the mask frame and the shadow mask at a position corresponding to 70% of a distance from the end of the long side of the mask frame toward the center thereof, DS3 denotes an interval between the mask frame and the shadow mask at a position corresponding to 70% of a distance from the end of the short side of the mask frame toward the center thereof, DLi denotes an interval between the center of the long side of the shadow mask and a center of an imaginary line connecting both ends of the long side of the mask frame, and DSi denotes an interval between the center of the short side of the shadow mask and a center of an imaginary line connecting both of the short side of the mask frame. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the following conditions satisfied: $0.3 \leq DL3/DLi \leq 0.5$, $0.3 \leq DS3/DSi \leq 0.5$, in which DL3 denotes an interval between the mask frame and the shadow mask at a position corresponding to 70% of a distance from the end of the long side of the mask frame toward the center thereof, DS3 denotes an interval between the mask frame and the shadow mask at a position corresponding to 70% of a distance from the end of the short side of the mask frame toward the center thereof, DLi denotes an interval between the center of the long side of the shadow mask and a center of an imaginary line connecting both ends of the long side of the mask frame, and DSi denotes an interval between the center of the short side of the shadow mask and a center of an imaginary line connecting both of the short side of the mask frame, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

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Claims 8-9 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nose et al (US 6104132) in view of Tani et al (US 6268688) and in further view of Tsuneta et al (US 373703).

Nose/Tani teach all the limitations set forth, as described above, except following conditions are satisfied $0^\circ \leq Lcor \leq 15^\circ$ or $0^\circ \leq Scor \leq 15^\circ$, in which Lcor denotes a slanted angle from the end of the long side of the mask frame toward the center thereof, and Scor denotes a slanted angle from the end of the short side of the mask frame toward the center thereof. Tsuneta et al teach following conditions are satisfied $0^\circ \leq Lcor \leq 15^\circ$ or $0^\circ \leq Scor \leq 15^\circ$, in which Lcor denotes a slanted angle from the end of the long side of the mask frame toward the center thereof ($a2=15^\circ$; column 5 lines 23-56), and Scor denotes a slanted angle from the end of the short side ($a3=15^\circ$) of the mask frame toward the center thereof, as well as $0^\circ < Lcor \leq Scor \leq 10^\circ$ ($a2=10$; column 5 line 50-51; $a3 \leq 10$; column 5 lines 53-56) in order to minimize the strain in the frame (column 5 lines 50-55). Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the CRT of Nose/Tani with the frame angles of Tsuneta in order to minimize the strain in the frame.

Claims 10 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nose et al (US 6104132) in view of Tani et al (US 6268688) and in further view of Bauder (US 4748371).

Nose/Tani teach all the limitations set forth, as described above, except an interval between the shadow mask and the mask frame is equal to or larger than 2.6mm. Bauder ('371) teaches an interval between the shadow mask and the mask frame is equal to or larger than 2.6mm (column 4 lines 49-55) in order to minimize the temperature differentials (column 4 lines 29-32). Hence, it would have been obvious to one of ordinary skill in the art at the time of the

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invention to combine the CRT of Nose/Tani with the interval of Bauder. Motivation to combine would be to minimize the temperature differentials.

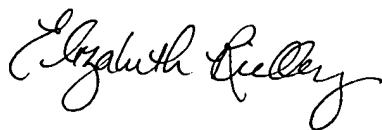
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth A. Rielley whose telephone number is 571-272-2117.

The examiner can normally be reached on Monday - Friday 7:30 - 4:00.

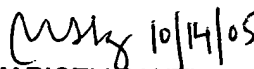
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Elizabeth Rielley

Examiner
Art Unit 2879


MARICELI SANTIAGO
PRIMARY EXAMINER